

larity. It seems the cultivated Schizophytes change and develop more slowly, and probably on that account are less vigorous in producing mischief; at any rate, an inoculation with cultivated Swine-plague Schizophytes, although effective in producing the disease, is always followed by a comparatively milder form of Swine-plague than an inoculation with material directly from the body of a diseased hog.† This, however, does not involve that every inoculation with cultivated Schizophytes produces under all circumstances a milder form of Swine-plague than any natural infection; for such is not the case. The difference may be stated thus:—A natural infection, or an inoculation with material directly from the body of a diseased hog, as a rule, produces a malignant and dangerous attack, and as an exception a mild form of the disease—the frequency of the exception depending, it seems, to a great extent, upon the prevailing character of the plague; while an inoculation with the cultivated Schizophyte is, as a rule, followed by a mild attack, and, as an exception, or in rare cases only, by Swine-plague in its severest form.

Wherever Swine-plague is prevailing in its most malignant or fatal form, or, what is essentially the same, wherever formation of ulcerous tumours in the cæcum and colon is a frequent occurrence, where consequently an abundance of Swine-plague Schizophytes is discharged with the excrements of the diseased animals, there the spreading from animal to animal, and from herd to herd, is a rapid one; and *vice versâ*, wherever the spreading is rapid, there ulcerous tumours in the intestines are a frequent occurrence. In 1878 the same (the ulcerous tumours) could be found in about 75 per cent. of all cases that had a fatal termination, while at present (in Illinois) their occurrence is probably limited to about 5 per cent. of all cases.

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## PROCEEDINGS OF LEARNED SOCIETIES.

### GEOLOGICAL SOCIETY.

February 23, 1881.—Robert Etheridge, Esq., F.R.S.,  
President, in the Chair.

The following communication was read:—

“On *Astroconia Granti*, a new Lyssakine Hexactinellid from the Silurian Formation of Canada.” By Prof. W. J. Sollas, M.A., F.G.S.

This paper contained a description of a new fossil Hexactinellid sponge from the Niagara chert beds of Hamilton, Ontario. It is

the second oldest known example of the Lyssakina. Some remarks were added on the mineral state of the spicules and their association with chert. The author proposed for it the name of *Astroconia Granti*, the former in allusion to the peculiarly spinose character of the rays of the sexradiate spicules. The anchoring spicules were described as consisting of a straight shaft with four recurved rays, each having a small bifid spine near the base on the outer surface.

In the discussion which followed

Prof. DUNCAN said it was interesting to see the modern Hexactinellids thus foreshadowed. Very lately he had seen one of the spicular forms described by Prof. Sollas in a form he had just described. He quite agreed with the author in assigning this form to the Lyssakine Hexactinellids. There could be no question as to the solution of sponge-spicules in sea-water, as he had lately seen evidence in specimens of deep-sea dredgings. The results of Mr. Maw's washing promised to be very interesting. He had examined many, but had not yet found either sponge-spicules or Foraminifera.

Prof. RUPERT JONES noticed that there are different kinds of "chert," and expressed his opinion that Mr. Sollas had well explained the origin and formation of the spicular strata which he had described on this and other occasions. He thought that Dr. Wallich's hypothesis of the conversion of extensive layers of sponge-protoplasm into black flint elucidated many, but not all, of the phenomena connected with the origin of such siliceous strata as flint and chert. He noticed that sponge-spicules, and numerous other Microzoa from the Upper Silurian shales of Shropshire, had been noticed lately by Mr. Smith of Kilwinning.

Dr. HICKS said that it was remarkable that chert was not associated with *Protospongia*, as, on either Dr. Wallich's or Prof. Sollas's view, might have been expected.

Prof. JUDD said that as the solution of siliceous organisms had been recently doubted, Prof. Sollas's observations were of additional interest. He himself fully believed that this solution did take place; now and then he had found, in examining the residues left by dissolving chalk in acid, the thickest portions of siliceous spicules still remaining not quite destroyed in chalk.

Prof. SOLLAS replied that he believed a spicule had been described by Mr. Carter similar to that mentioned by Prof. Duncan. The one described now by him was, however, much more robust. He had never been able to find spicules in the Wenlock. He really could not comprehend what Dr. Wallich's views really were. That none of the fossil siliceous spicules which the author had described were originally calcareous was quite certain. As for *Protospongia*, it did not occur in limestone, and bore a very small proportion to the mass of the bed; and this might account for the absence of the chert.

March 9, 1881.—Robert Etheridge, Esq., F.R.S.,  
President, in the Chair.

The following communications were read:—

1. "Description of Parts of the Skeleton of an Anomodont Reptile (*Platypodosaurus robustus*, Ow.).—Part II. The Pelvis." By Prof. Owen, C.B., F.R.S., F.G.S., &c.

In this paper the author described the remains of the pelvis of *Platypodosaurus robustus* which have now been relieved from the matrix, including the sacrum, the right "os innominatum," and a great part of the left ilium. There are five sacral vertebræ, which the author believes to be the total number in *Platypodosaurus*. The neural canal of the last lumbar vertebra is 8 lines in diameter, and of the first sacral 9 lines, diminishing to 6 lines in the fifth, and indicating an expansion of the myelon in the sacral region, which is in accordance with the great development of the hind limbs. The sacral vertebræ increase in width to the third; the fourth has the widest centrum. This coalescence of the vertebræ justifies the consideration of the mass, as in Mammalia, as one bone or "sacrum," which may be regarded as approaching in shape that of the Megatherioid Mammals, although including fewer vertebræ. Its length is  $7\frac{1}{2}$  inches; its greatest breadth, at the third vertebra,  $5\frac{1}{2}$  inches. The ilium forms the anterior and dorsal walls of the acetabulum, the posterior and postero-ventral walls of which are formed by the ischium and pubis. The diameter of its outlet is 3 inches, the depth of the cavity  $1\frac{1}{2}$  inch; at its bottom is a fossa  $1\frac{1}{3}$  inch broad. The foramen is subcircular, 1 inch in diameter. The ventral wall of the pelvic outlet is chiefly formed by the pubis; it is a plate of bone 6 inches broad, concave externally, convex towards the pelvic cavity. The subacetabular border is 7–8 lines thick; it shows no indication of a pectineal process, or of a prominence for the support of a marsupial bone. The author remarks that of all examples of pelvic structure in extinct Reptilia this departs furthest from any modification known in existing types, and makes the nearest approach to the Mammalian pelvis. This is shown especially by the number of sacral vertebræ and their breadth, by the breadth of the iliac bones, and by the extent of confluence of the expanded ischia and pubes.

2. "On the Order Theriodontia, with a Description of a new Genus and Species (*Elurosaurus felinus*, Ow.). By Prof. Owen, C.B., F.R.S., F.G.S.

The new form of Theriodont reptile described by the author in this paper under the name of *Elurosaurus felinus* is represented by a skull with the lower jaw, obtained by Mr. Thomas Bain from the Trias of Gough, in the Karoo district of South Africa. The post-orbital part is broken away. The animal is mononarial; the alveolar border of the upper jaw is slightly sinuous, concave above the

incisors, convex above the canines and molars, and then straight to beneath the orbits. The alveolar border of the mandible is concealed by the overlapping teeth of the upper jaw; its symphysis is deep, slanting backward, and destitute of any trace of suture; the length of the mandible is  $3\frac{1}{4}$  inches, which was probably the length of the skull. The incisors are  $\frac{5-5}{5-5}$ , and the molars probably  $\frac{5-5}{5-5}$  or  $\frac{6-6}{6-6}$ , all more or less lanariform. The length of the exerted crown of the upper canine is 12 millim.; the root of the left upper canine was found to be twice this length, extending upwards and backwards, slightly expanded, and then a little narrowed to the open end of the pulp-cavity. There is no trace of a successional canine; but the condition of the pulp-cavity and petrified pulp would seem to indicate renewal of the working part of the canine by continuous growth. The author infers that the animal was monophyodont. *Ælurosaurus* was said to be most nearly allied to *Lycosaurus*; but its incisor formula is Dasyurine.

With regard to the characters of the Theriodontia the author remarked that we may now add to those given in his 'Catalogue of South African fossil Reptiles,' that the humerus is perforated by an entepicondylar foramen, and the dentition monophyodont.

April 27, 1881.—Robert Etheridge, Esq., F.R.S.,  
President, in the Chair.

The following communication was read:—

“On Fossil Chilostomatous Bryozoa from the Yarra-Yarra, Victoria, Australia.” By Arthur William Waters, Esq., F.G.S.

The author gave a descriptive list of seventy-two species of Bryozoa belonging to the suborder Chilostomata, from a lump of clay obtained by Mr. Allen from the neighbourhood of the Yarra-Yarra river. The specimens are fragmentary, but in excellent preservation. There are eight species of *Catenicella*, a genus unknown in the fossil state until quite recently, when Mr. Bracebridge Wilson described twelve fossil species, none of which are known living; two of the Yarra-Yarra species still live in the Australian seas; and one of these also occurs in the Geological Society's collection from Mount Gambier. Among the most interesting of all the specimens described by the author is a *Catenicella* consisting of long internodes, with a double row of cells in each internode. The short-beaded *Catenicellæ* now living have probably been developed from forms with long internodes. *Microporella* is also well represented by some interesting forms, which make it necessary to widen the definition of the genus. A very interesting *Cellaria* with subglobular internodes explains the Cretaceous fossil called *Eschara aspasia* by d'Orbigny.

Of the Chilostomata found in this deposit thirty-nine are considered new, although this number may have to be reduced; nineteen are now found living; seven correspond with those from the fossiliferous beds of Orakei Bay, New Zealand, described by Stoliczka;

and twenty-three are found in the Mount Gambier formation. Of about thirty Cyclostomatous Bryozoa which occur in this deposit, at least seven are common to it and Orakei Bay. Besides the Bryozoa the author has obtained many other organisms from this clay, and especially a large number of Foraminifera, now in the hands of Prof. Karrer of Vienna. He estimates the total number of determinable species belonging to various classes at over 200.

In treating of his special subjects the author adopts the principles of classification laid down by Hincks, Smitt, and other recent writers on living Bryozoa, which he regards as preferable in themselves, and also as facilitating the comparison of fossil with recent forms.

#### BIBLIOGRAPHICAL NOTICE.

*A Memoir on the Echinodermata of the Arctic Sea to the West of Greenland.* By P. MARTIN DUNCAN, M.B. (Lond.), F.R.S., &c., and W. PERCY SLADEN, F.G.S., F.L.S., &c. With Six Plates. London: Van Voorst, 1881.

THE value and importance of a carefully prepared monograph on a given group of a given zoological province was brought before the readers of this journal a month or two ago, when their attention was directed to Capt. Legge's work on the Birds of Ceylon. We have again to illustrate this point by a notice of the memoir on a very different group of animals and from a very different region, which Prof. Duncan and Mr. Sladen have been able, by the aid of the government-grant fund, to publish in a very handsome form.

Thirty species of Echinodermata are in all described, and careful figures of parts, or complete specimens of most of these, are to be found on the six large plates which make a not unimportant portion of the volume. All, we are informed, tell the same tale as to distribution, and speak to the existence of a circumpolar fauna; herein they corroborate the results to which all recent investigators into the details of Arctic distribution have been led, and which, we may point out, were, so long ago as 1861, well expressed by Sir Joseph Hooker, when he spoke of the Scandinavian flora as girdling the globe in the Arctic Circle. When, however, the authors add to this that there is no extension northwards from more temperate climates we cannot think that they mean to speak of an arctic circumpolar as distinguished from a boreal circumpolar region (in the sense in which these words are used by Prof. Ehlers); for of the species which they describe no less than nine\* have been found further south than the sixtieth parallel, and seven others have been

\* Or ten, if the *Ophioglypha Tenorii* of Heller (Adriatic) be, as Mr. Lyman thinks, synonymous with *O. robusta*.